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AUTHOR Bryan, Jon L.; Thuemmel, William L.
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ABSTRACT

A study analyzed student delays in flight certification at 106 University Aviation Association (UAA) member postsecondary institutions. After a pilot survey of 5 institutions, questionnaires were mailed to the 101 remaining UAA administrators; 80 responses were returned. Correlations of items in the survey were analyzed and significant correlations determined. Pearson product-moment correlations were used for the correlation analysis. Approximately 88 percent of UAA postsecondary institutions that offered flight programs indicated that they were experiencing major or minor problems with delays in student progress. No trend was reported in the rate of flight student progress delays. No relationship was noted between the incidence of delays and the level of degree offered at the postsecondary institutions. The use of simulators or ground training devices was related to a reduction in major progress delays. No clear relationship could be established between institutional monitoring of flight student progress during the semester and a reduction in flight student progress delays. Weather, geographic location, instructor availability, instructor turnover, aircraft availability, and institutional financial and grading policies were not related to flight student training progression. (Contains 10 references.) (YLB)

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AN ANALYSIS OF STUDENT PROGRAMMATIC DELAYS IN POSTSECONDARY FLIGHT TRAINING PROGRAMS: A NATIONAL STUDY

Jon L. Bryan, Professor
Bridgewater State College
Department of Management Science and Aviation Science
Bridgewater, MA 02325
Tel: 508-697-1234 x2473
Fax: 508-428-7654
E-Mail: jbryan@bridgew.edu

William L. Thuemmel, Associate Professor
University of Massachusetts Amherst
School of Education
Amherst, MA 01003
Tel: 413-545-2731
Fax: 413-545-2879
E-Mail: thuemmel@educ.umass.edu

Abstract

The purpose of this study was to determine the number of University Aviation Association(UAA) member postsecondary institutions that were experiencing student delays in flight certification. Such delays can lead to increased costs for the student, the failure to complete the intended academic program, and an interruption in career progression.

The study revealed that approximately 88% of the respondents noted that they were experiencing a problem with flight student progress delays at their institution. The research indicated that institutional financial policies, such as the formal determination of flight student finances in advance of each semester, were factors in reducing "Major" progress delays.

Introduction

Since the passage of the Airline Deregulation Act (ADA) in 1978, the need for professionally-trained air carrier pilots in the United States has expanded substantially. Major carriers have used the economic freedoms granted by the ADA to expand, and dozens of new air carriers have received their operating certificates.

The reduction in military pilot training in the post-Vietnam era came at a very inopportune time for the airlines. While the United States air carriers have already witnessed a decrease in pilot experience levels as a result of recent expansion, they are now facing the largest pilot-force transition in the history of civil aviation. In the next 10 years, approximately 23,000 airline pilots will retire; nearly one-third of those currently employed. Further, if the airline industry regains profitability, it is estimated that an

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additional 4,500 pilots will be needed each year for carrier expansion (Bayles, 1993, p. F-1).

Today, postsecondary academic institutions have replaced the military as a major source of cockpit staff. The number of postsecondary institutions in the United States has grown from 229 in 1950 to 565 in 1985. In 1950, 33 of those institutions offered flight technology courses, with that number increasing to 397 by 1985 (Rollo, p. 21, 1990). As Bayles (1993) noted, "a few years ago, 85% of airline crews learned how to fly in the military; by decade's end, only a third will have that claim" (p. F-8).

While the colleges and universities offering postsecondary flight training programs do not have the aviation resources of the U.S. Air Force or Navy, the airlines have found that postsecondary institutions produce high-quality, professional aviators. Further, most postsecondary programs require that the pilots learn critical thinking skills through a substantial component of general education and cognate courses (Federal Aviation Administration, 1993a).

Many postsecondary institutions coordinate their curricular offerings through membership in the University Aviation Association (UAA), and in conjunction with the Airway Science Program (AWS) developed by the Federal Aviation Administration (FAA) (Schukert, 1992). The Airway Science Program was introduced in 1981, by then Administrator of the Federal Aviation Administration J. Lynn Helms, through the creation of a task force for the proposed AWS program (Federal Aviation Administration, 1993b). According to Clifford (1983), "the Airway Science Program is intended to provide the National Airspace System (NAS) and the FAA with a dependable source of people who not only are competent technically but who also have the academic foundation for leadership jobs" (p. 4).

Thus, the typical career track for the professional aviator has changed dramatically in the post-Vietnam, post-ADA era. The colleges and universities have supplanted the approximately one million dollar per pilot government-provided military training.

Purpose and Objectives

The purpose of this study was to determine the number of UAA member postsecondary institutions that were experiencing student delays in flight certification. Such delays can lead to increased costs for the student, the failure to complete the intended academic program, and an interruption in career progression. The study began with six basis research questions from which a questionnaire was developed. The questions were as follows:

1. How many UAA institutions nationwide are currently experiencing problems with flight student programmatic delays, whereby students fail to complete their flight courses in the semester prescribed by the curriculum?

2. Is the problem of flight student programmatic delays increasing or decreasing?

3. Is there a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression?

4. Is the use of flight simulation related to postsecondary flight student training progression?

5. Is institutional monitoring of student flight progress during the semester related to flight student training progression?

6. Are weather, geographic location, instructor availability, instructor turnover, aircraft availability, and institutional financial and grading policies related to flight student training progression?

Methods and/or Procedures

Description of the Population

The population for the study included the flight program administrators at all University Aviation Association (UAA) member postsecondary institutions in the United States. There are 109 member institutions listed in the UAA directory. However, three institutions were removed from the study—the two that are located outside the United States and the senior author's home institution. A questionnaire was sent either to the aviation program coordinator or chairperson, identified by the UAA, at each of the 106 eligible UAA member institutions.

Instrumentation

The survey instrument was developed in response to, and on the basis of, problems of postsecondary programmatic delays experienced by flight students at the senior author's home institution, and that were understood to exist at other UAA member institutions. Questionnaire content was guided by the six research questions identified previously. Additional questions were developed as the result of closed- and opened-ended questionnaires completed by students at the senior author's institution (Bryan, 1995). Curricular data developed by the UAA were also used in developing the survey instrument (Kiteley, 1976).

The questionnaire was prepared so as to fit on the front and back side of one sheet of paper. A letter of introduction, identifying the purpose of the study and noting the anonymity of the respondents, was included with the survey questionnaire. A stamped,

self-addressed return envelope was included for the return of the questionnaire to the researcher. The return envelopes were coded, with a number assigned for each UAA recipient.

Prior to mailing the questionnaire to the entire UAA list of program administrators, a pilot survey was conducted to test the appropriateness of the instrument. Five flight administrators were chosen at random from the UAA list and were mailed the cover letter and research questionnaire two weeks prior to the full mailing to listed UAA institutions. The responses from the pilot mailing were reviewed. As a result of the comments from the pilot survey of the five participants, changes were made to Question 3 of the survey instrument to allow for additional geographic regions.

The survey questions related directly to the research questions. This afforded content validity to the study, as assessed by a three-member faculty panel of experts at the University of Massachusetts. Content validity, as described by Borg and Gall (1989), is the degree to which the sample questions represent the content that the research instrument is designed to measure. Content validity and clarity were ensured further by pilot testing.

Data Collection

After the pilot survey of five institutions, the questionnaires were mailed to the 101 remaining UAA administrators on September 27, 1995. Each cover letter to the potential respondents included an offer of a summary of the research findings. The offer of providing the data summary was not predicated upon the individual's completion of the survey. The UAA administrator questionnaire contained a total of 20 questions. Seventeen of the questions were directly related to issues pertaining to the postsecondary flight student experiences and operations. The remaining questions were used to gather generic data concerning the postsecondary institution and its operations. A second mailing to non-respondents was made three weeks after the main mailing, and follow-up telephone calls to non-respondents ere made one week after the second mailing. A total of 80 responses were completed and returned by respondents, resulting in a 79% response rate.

Analysis of Data

The data were reported in narrative and tabular form as appropriate. Crosstabulations were presented where the information could be useful in understanding flight student

programmatic delays. Execustat 3.0 was utilized for all statistical analysis. Appropriate graphical representation of data were included. Correlation's of items in the survey were analyzed and significant correlations determined. Pearson product-moment correlations were utilized for the correlation analysis. An alpha level of .05 was set a priori.

Findings

This study of postsecondary flight training delays began with six basic research questions. Each of those questions is presented again to provide a context for the findings.

1. How many UAA institutions nationwide are currently experiencing problems with flight student programmatic delays, whereby students fail to complete their flight courses in the semester prescribed by the curriculum?

Responses to this question were garnered from Item 6 from the questionnaire. The responses to Item 6 reported whether the institution was experiencing no problem, a minor problem, or a major problem. The results were reported in Table1. The data revealed that nearly 88% of the postsecondary institutions were experiencing a problem with the failure of flight students to complete their flight courses in the semester prescribed by the curriculum. Responses indicated that 37 institutions (58% of the respondents), were experiencing minor delays, and 19 institutions (nearly 30%), were experiencing major delays. Only seven institutions (11%), reported that they were not experiencing a problem with flight student programmatic delays.

Table 1

Level of Flight Student Progress Delay Problems by Institution

Delay Problem at Institution	Number	Percent
None	7	10.94
Minor	37	57.81
Major	19	29.69
Non-response	1	1.56
Total	64	100.00

In addition to the direct response from the participants to Research Question 1 in Item 6 of the questionnaire, further data were gathered in Item 11 of the questionnaire. In that

question, participants were asked "How many of your flight students fail to complete their flight course in the semester predicated by the syllabus?"

Over 20% noted that 1-10% of their students failed to complete their flight course in the prescribed semester; over 34% reported 11-25%; nearly 22% noted 26-50%, and nearly 19% responded that more than 50% of their students failed to complete their flight courses on time. One respondent reported that all of their institution's students completed their flight courses in the semester predicated by the syllabus.

2. Is the problem of flight student programmatic delays increasing or decreasing?

This questioned pertained to whether the problem of flight student programmatic delays was increasing or decreasing at institutions where the respondents reported that a problem existed. The data revealed that 42 respondents (nearly 66%) reported no trend. Ten respondents (nearly 16%) reported that the problem of flight student programmatic delays was decreasing, while 7 (nearly 11%) reported the problem was increasing.

3. Is there a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression?

This question sought to identify whether there was a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression. Thirty-nine (nearly 62%) of the reporting postsecondary institutions were four-year schools, and twenty-one (approximately 33%) were two-year schools. Three respondents (approximately 5%) noted "Other" (two granting a master's degree and the other no degree).

While both the two-year and four-year institutions reported combined minor and major problems with flight student progression of approximately 88%, the two-year institutions had a greater rate of reported "Major" problems. Two-year schools reported "Major" problems in 38% of the responses, while four-year schools reported "Major" problems in approximately 28% of the responses.

4. Is the use of flight simulation related to postsecondary flight student training progression?

Responses to this question were obtained from Items 14 and 15 of the questionnaire. The results of a crosstabulation between Items 14 and 15 with Item 6 from the questionnaire were reported in Tables 2 and 3 respectively.

Table 2

Use of Simulators as part of Flight Course and Level of Flight Student Progress Delays

	Level of Delays			Number/% Row Total
Require	None	Minor	Major	
Yes	7	32	10	49
	11.1	50.8	15.9	77.78
No	0	5	9	14
	0.0	7.9	14.3	22.22
Column	7	37	19	63*
Total	11.11	58.73	30.16	100.00

Note: *One of the 64 institutions that provided flight training for academic credit did not respond to one of the questions in the crosstabulation, and were not included in Table 2.

Table 3

Require the Use of Simulators During Extended Non-Flying Periods and Level of Flight Student Progress Delays

	Level of Delays			Number/% Row Total
Use Simulators	None	Minor	Major	
Yes	1	8	1	10
	1.6	13.1	1.6	16.39
No	5	28	18	51
	8.2	45.9	29.5	83.61
Column	6	36	19	61*
Total	9.84	59.02	31.15	100.00

Note: *Three of the 64 institutions that provided flight training for academic credit did not respond to one or more questions in the crosstabulation, and were not included in Table 3.

The data in Table 2 indicated that nearly 78% of the institutions require the use of simulators or pilot ground training devices as a part of their private or commercial pilot flight courses. While approximately 22% reported no such requirement for their flight

students, those schools produced nearly half of the "Major" problem responses in Item 6 of the questionnaire.

The responses to Item 15 indicated that approximately 81% of the schools did not require the use of simulators for students with extended non-flying periods. However, the schools that did require the use of simulators for students who did not fly for three or more weeks reported a lower rate of "Major" problems with student progress.

There was a total of 62 responses to Item 15. Ten reported that they required the use of ground trainers during such non-flying periods, with only one reporting "Major" progress problems. Fifty-two reported they did not use such devices, and reported 18 "Major" progress problems.

The data indicated a relationship between the incidence of major flight student progress delays at postsecondary institutions and the use of ground training devices. While the use of ground trainers does not appear to lessen the incidence of minor problems, it appears to be related to a reduction in the rate of major progress delays.

5. Is institutional monitoring of student flight progress during the semester related to flight student training progression?

The responses to this question were garnered from Item 20 of the questionnaire. The responses indicated that approximately 90% of the institutions monitored the progress of their flight students during the semester. No clear relationship could be drawn between institutional monitoring of flight student progress during the semester and flight student delays.

6. Are weather, geographic location, instructor availability, instructor turnover, aircraft availability, and institutional financial and grading policies related to flight student training progression?

Item 12 from the questionnaire elicited responses regarding weather, instructor availability, and aircraft availability as factors in flight training delays. Twenty-one of the 64 institutions (approximately 33%) reported that weather was the major factor in flight training delays. Twenty-eight institutions (nearly 44%) noted that student finances were the most important causal factor for flight training delays.

Item 12 also asked the respondents to rank instructor and aircraft availability as causal factors in flight student progress delays. None of the respondents reported these two areas as primary causal factors.

A crosstabulation of institutional geographic location in Item 3 of the questionnaire and Item 6, indicating problems with flight student progress delays, indicated no clear relationship between geographic location of the school and flight student progress delays. A larger percentage of the institutions in the north central United States (20%) reported

no problems with flight student progress delays than those located in the southeastern United States (approximately 15%).

Item 17 from the questionnaire asked whether flight instructor turnover was a factor in flight student progress delays. The results indicated that flight instructor turnover was not a major problem at most institutions. Forty-five (approximately 70%) reported no problems in that area.

Items 9 and 10 of the questionnaire were related to institutional financial policies and their impact of flight student progress delays. The responses from Items 9 and 10 were crosstabulated with the responses from Item 6 of the questionnaire, which asked whether the institution was experiencing a problem with flight student progress delays. The data indicated "Major" flight student delays at 14 of the 29 institutions that did not have a formal process for determining student financial fitness. Only one of nine that did determine student financial fitness reported experiencing "Major" progress delays.

Item 19 from the questionnaire asked whether the respondent's institution used the same policy regarding flight course incomplete grades as in other academic courses. Approximately 48% of the respondents reported a more flexible policy rendered toward flight students, while nearly 52% reported using the same policy as in other academic courses. None of the respondents reported that a less flexible policy was used for flight students.

A crosstabulation was developed using Item 19 and Item 6, the level of reported flight student progress delays. There was little difference between the institutions with the "Same" policy as in other academic courses and those with a "More flexible" grading policy. Of the 33 institutions reporting the "Same" policy toward incomplete flight grades, 20 reported "Minor" problems and 9 reported "Major" problems. Of the 30 institutions reporting a "More flexible" policy, 17 indicated "Minor" problems and 10 reported "Major" problems.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

As a result of the data obtained by this study, the following conclusions and interpretations were drawn:

1. Approximately 88% of UAA postsecondary institutions that offer flight programs indicated that they were experiencing major or minor problems with flight student progress delays.

2. No trend was reported in the rate of flight student progress delays.

3. No relationship was noted between the incidence of flight student progress delays and the level of degree offered at the postsecondary institutions. A larger percentage of the flight student progress delays were classified as major at the two-year institutions.
4. The use of simulators or ground training devices was related to a reduction in "Major" flight student progress delays.
5. No clear relationship could be established between institutional monitoring of flight student progress during the semester and a reduction in flight student progress delays.
6. No relationship was established between weather as a causal factor and geographic location. Instructor turnover, instructor availability, and aircraft availability were not factors in flight student progress delays. Institutional financial policies were related to student delays. No relationship was found between grading policies (for example, incomplete grades) and student delays.

Recommendations

Indications are that postsecondary flight training institutions will continue to play an increasingly important role in the training of professional cockpit crewmembers. With the high cost of the flight component of that training, it is important that postsecondary administrators and educators understand the underlying factors in flight student progress delays.

Prior to this study, no information was available about the incidence of flight student delays at postsecondary institutions. With the results of the study indicating that nearly 88% of the institutions were experiencing such delays, policies should be implemented to ameliorate the problem.

The study indicated that institutions that do not require prepayment of flight fees or engage in a formal determination of flight student finances prior to the start of a semester experience a higher percentage of "Major" delays. It is recommended that institutions engage in a formal determination of student financial fitness or prepayment in an effort to reduce "Major" flight progress delays.

The use of ground-based flight training devices was found to be associated with a reduction in flight student progress delays. With the increasing sophistication and modest cost of such devices, it is recommended that institutions incorporate the use of ground-based trainers in their flight courses.

Further, the research indicated that institutions requiring the use of ground-based training devices for students who did not fly for three or more weeks experienced a lesser rate of "Major" flight progress delays.

This conclusion is supported by the earlier research of Hollister et al. (1973) that noted flight skills for low-time pilots "will decay exponentially to zero with a time constant of

four weeks of no flying" (p. x). Therefore, it is recommended that institutions incorporate policies that require the use of ground-based trainers for students subjected to non-flying periods of three or more weeks.

Further research is recommended in the areas of institutional financial policies toward postsecondary flight students, as well as flight student motivational attitudes, and their effect on progress delays. The use of qualitative techniques such as in-depth interviewing would likely yield greater understanding in these areas.

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